CLAIMS

I Claim:

1. An intraluminal support device for providing support to a body vessel, comprising:

a support frame comprising a tubular structure formed of one or more frame threads and having a length and a substantially uniform circumference; and

a graft material disposed on a portion of the support frame and spanning at least a portion of the length, the graft material extending only a partial distance along the circumference of the support frame.

2. The intraluminal support device of claim 1, wherein the one or more frame threads define a plurality of cells; and

wherein the graft material spans at least one of the plurality of cells.

3. The intraluminal support device of claim 1, wherein the uniform circumference is adapted to engage the entire interior circumference of a particular cross-section of said vessel.

4. The intraluminal support device of claim 1, wherein a single frame thread forms the support frame.

5. The intraluminal support device of claim 4, wherein the frame thread defines a plurality of ring segments joined together by curved regions.

6. The intraluminal support device of claim 5, wherein adjacent curved regions extend beyond each other such that adjacent ring segments are interleaved.

7. The intraluminal support device of claim 4, wherein the frame thread comprises a pattern formed from a sheet of biocompatible material.

8. The intraluminal support device of claim 1, wherein the graft material extends from a first end to a second end of the support frame.

9. The intraluminal support device of claim 1, wherein the graft material extends along a fractional length of the length of the support frame.

10. The intraluminal support device of claim 1, wherein the portion of the support frame contacting the graft material is embedded in the graft material.

11. The intraluminal support device of claim 1, wherein the graft material covers the portion of the support frame contacting the graft material.

12. The intraluminal support device of claim 11, further comprising attachment means for connecting the graft material to the support frame.

13. The intraluminal support device of claim 1, wherein the partial distance along the circumference of the support frame is approximately ½ of the circumference.

14. The intraluminal support device of claim 1, wherein the partial distance along the circumference of the support frame is approximately ¼ of the circumference.

15. The intraluminal support device of claim 1, further comprising at least one radiopaque marker disposed on a frame thread.

16. The intraluminal support device of claim 15, wherein the graft material has first and second lateral edges along the circumference of the support frame;

wherein the at least one radiopaque marker comprises first and second radiopaque markers;

wherein the first radiopaque marker is positioned adjacent the first lateral edge; and

wherein the second radiopaque marker is positioned adjacent the second lateral edge.

17. The intraluminal support device of claim 16, wherein the at least one radiopaque marker further comprises a third radiopaque marker disposed between the first and second radiopaque markers and adjacent the graft material.

18. An intraluminal support device, comprising:

a frame thread formed into a plurality of interleaved ring segments joined together by curved regions to form a tubular structure having a first end, a

second end, and defining a plurality of cells that provide a substantially uniform circumference to the tubular structure; and

a graft material extending only a partial distance along the circumference of the tubular structure and from the first end to the second end such that the graft material spans a portion of each cell of the plurality of cells.

19. The intraluminal support device of claim 18, wherein the partial distance along the circumference of the tubular structure is approximately ½ of the circumference.

20. The intraluminal support device of claim 18, wherein the partial distance along the circumference of the tubular structure is approximately ¼ of the circumference.

21. An intraluminal support device, comprising:

a support frame formed from a pattern in a sheet of biocompatible material, the support frame comprising a tubular structure having a first end, a second end, and defining a plurality of cells that provide a substantially uniform circumference to the support frame; and

a graft material extending only a partial distance along the circumference of the support frame and from the first end to the second end such that the graft material spans a portion of each cell of the plurality of cells.

22. The intraluminal support device of claim 21, wherein the partial distance along the circumference of the support frame is approximately ½ of the circumference.

23. The intraluminal support device of claim 21, wherein the partial distance along the circumference of the support frame is approximately ¼ of the circumference.

24. The intraluminal support device of claim 21, further comprising attachment means for connecting the graft material to the support frame.

25. The intraluminal support device of claim 21, further comprising at least one radiopaque marker disposed on the support frame.

26. The intraluminal support device of claim 25, wherein the graft material has first and second lateral edges along the circumference of the support frame;

wherein the at least one radiopaque marker comprises first and second radiopaque markers;

wherein the first radiopaque marker is positioned adjacent the first lateral edge; and

wherein the second radiopaque marker is positioned adjacent the second lateral edge.

27. The intraluminal support device of claim 26, wherein the at least one radiopaque marker further comprises a third radiopaque marker disposed between the first and second radiopaque markers and adjacent the graft material.

28. An apparatus for delivering an intraluminal support device to a vessel, comprising:

a first catheter having a first distal end;

a balloon positioned on the first distal end;

a support frame surrounding the balloon and comprising a tubular structure formed of one or more frame threads defining a plurality of cells that provide a substantially uniform circumference to the support frame; and

a graft material disposed on a portion of the support frame and spanning at least a portion of one or more cells of the plurality of cells, the graft material extending only a partial distance along the circumference of the support frame;

wherein the balloon is adapted to circumferentially expand the support frame upon inflation.

29. The apparatus of claim 28, further comprising a retractable second catheter having a second distal end defining a lumen;

wherein the support frame and first catheter are disposed in the lumen of the second distal end.

30. An intraluminal support device, comprising:

a support frame comprising a tubular structure having a uniform circumference and formed of a pattern in a sheet of biocompatible material, the pattern defining first and second series of opposing fingers connected by a longitudinal support; and

a graft material attached to first and second fingers of the first series of opposing fingers and extending only a partial distance along the circumference of the support frame.

31. The intraluminal support device of claim 30, wherein a portion of at least one finger of the second series of fingers lies below the graft material.

32. The intraluminal support device of claim 31, wherein a clearance exists between a portion of the first and second fingers of the first series of fingers and the graft material.

33. The intraluminal support device of claim 30, wherein the graft material is attached to distal ends of the first and second fingers.

34. The intraluminal support device of claim 30, wherein the partial distance along the circumference of the support frame is approximately ½ of the circumference.

35. The intraluminal support device of claim 30, wherein the partial distance along the circumference of the support frame is approximately ¼ of the circumference.

36. The intraluminal support device of claim 30, further comprising at least one radiopaque marker disposed on the support frame.

37. The intraluminal support device of claim 36, wherein the graft material has first and second lateral edges along the circumference of the support frame;

wherein the at least one radiopaque marker comprises first and second radiopaque markers;

wherein the first radiopaque marker is positioned adjacent the first lateral edge; and

wherein the second radiopaque marker is positioned adjacent the second lateral edge.

38. The intraluminal support device of claim 37, wherein the at least one radiopaque marker further comprises a third radiopaque marker disposed between the first and second radiopaque markers and adjacent the graft material.